

## Research, Engineering and Development Advisory Committee (REDAC) | MINUTES

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**Meeting date** | time 4/17/2014 - 9:00 am | **Meeting location** FAA – 800 Independence Avenue, SW. Washington, DC

<b>Purpose</b>	REDAC Recommendations on the FY 2016 Research and Development Portfolio
<b>Facilitator</b>	Pam Whitley (filling in for Dennis Filler, REDAC Executive Director)
<b>Note Taker</b>	Candice Albert

Ms. Pamela Whitley opened the meeting by welcoming everyone and reading the public meeting announcement.

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**Presentation** Comments- Deputy Administrator | **Presenter** Mr. *Michael Whitaker*

**Discussion:** Mr. Whitaker stated that this is his first opportunity to meet with the Committee so he asked the members to introduce themselves. Mr. Whitaker thanked the retiring members, Amy Pritchett, Steve Alterman, and Joseph Del Balzo. Mr. Whitaker distributed a summary sheet showing FAA's strategic priorities and priority initiatives announced earlier this year by the Administrator. He elaborated on the four initiatives; Workforce of the Future, Risk-Based Decision Making, National Airspace System (NAS) Initiative, and Global Leadership.

Mr. Whitaker stated that it was NextGen that motivated him to come to the FAA, since it is such a large, long term undertaking. Delivering benefits to users is important for NextGen. Environment and energy is a driver for NextGen; the Continuous Lower Energy, Emissions and Noise (CLEEN) program supports NextGen. The second component under this initiative is introducing new users into the system. The integration of unmanned aircraft systems (UAS) could not be done effectively without NextGen. The FY 2105 budget request for UAS research is 9 million dollars and 6 test sites have been selected and are on the verge of becoming operational. The third initiative, the NAS initiative, is about right sizing the NAS.

### Comments and Questions

Dr. John Hansman stated that he's pleased with the direction things are flowing with NextGen; however, he is concerned as to how they will integrate UAS requirements with NextGen. Mr. Whitaker commented that UAS is such a huge undertaking that they are trying to subdivide it into portions, smaller UAS getting immediate attention. Dr. Hansman stated there is an opportunity to adapt NextGen to adapt to UAS operations. Dr. Hansman suggested the FAA think about the different roles of operations. NextGen as a concept is a good way to analyze the concepts of operations.

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**Presentation** NextGen Organization Update | **Presenter** *Mr. Edward Bolton*

**Discussion:** Mr. Bolton discussed four areas that they are focused on in NextGen. The first is executing programs, their top seven programs are: Automatic Dependent Surveillance-Broadcast (ADS-B), En Route Automation Modernization (ERAM), Data Communications (Data Comm), System Wide Information Management (SWIM), Terminal Automation Modernization and Replacement (TAMR), Trip Data and Safety Management (TDSM), and National Airspace System Voice System (NVS). Those programs have 19 major milestones in the next few years, 3 of them has already been met. Nearly every program is on schedule to have that capability complete. ADS-B has about 611 ground stations already done; there is rulemaking effective as of 2020. The second thing they are focused on is asking the NextGen Advisory Council to summarize their priorities.. Mr. Bolton stated that they are focused on delivering these capabilities in the next three years. Congressional tasking required putting together milestones with delivery dates, metrics, cost, by location, etc. by the 28<sup>th</sup> of July. The third area of focus is calibration; it goes outside of the FAA. The fourth area is examination and renewal. MITRE has been tasked to do a baseline assessment to look at the capital spent to deliver capabilities that support the 2020 goal they have, along with doing a lessons learned assessment.

#### Questions and Comments

Mr. Steve Alterman asked when you say NextGen as we know it ends in 2020; from an airline perspective we understand that ADSB-Out is a necessary component. You're concerned with ADSB-In that is clearly pass the 2020 timeframe, guessing that the pilots can do things for themselves in the aircraft. How does that fit into what you are currently doing now?

Mr. Bolton responded that he believes there will be one huge life changing event by 2020. He phrased it as a *cyber 9-11 event*. We expect to be focused on the implementation of these programs. He is working on research now as to how they will interact with each other. He added that they are well ahead on the process of ADSB-In.

Dr. Amy Pritchett stated that integration between facilities, and air-ground integration has been a concern of human factors.

Mr. Bolton stated that since Ms. Whitley is doing a deep dive for Human Factors she could better elaborate. Ms. Whitley discussed that because of the way Congress gives us money one year at a time, they focus their work one year at a time. The integration becomes a key part on how they deliver capability. ANG has a lot of responsibility for doing research that informs business across the FAA. They do not manage aviation safety but they do conduct research to give those who do data to do so.

Mr. Bolton said that NextGen will face challenges. He believes NextGen advances will come in waves; first delivering something that is turnkey ready, second cultural changes for example who will want to change over to a new system willingly, and lastly having to become accustomed to

the new hires way of thinking. The new generations' approach can be completely different from what we are accustomed to.

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**Presentation REDAC Holistic View - Going Forward–August Meeting | Presenter**  
*Dr. Cathy Bigelow*

Dr. Bigelow, presenting on behalf of Dennis Filler, spoke about designing a more strategic integrated research and development (R&D) portfolio. Dennis's message that he presented to the Subcommittees at their Spring meetings was a precursor to the tasking for the next set of meetings in the August-September timeframe. Dennis's view is to have a more innovative portfolio by planning further ahead; ten years further to be more exact. She stated that, after reviewing the tasking, the Subcommittees should ask the FAA for information that they may need to complete the assignment so that the FAA can provide them with the appropriate information they will need.

Questions and Comments

Mr. Joseph Bertapelle asked how this Holistic View ties into what Mr. Ed Bolton was speaking about.

Ms. Pam Whitley clarified that Mr. Bolton was speaking about the build out of the platforms. By 2020 you will have transformed the automation transforms, transform traffic flow management and you will hopefully get the Joint Research Council (JRC) decision. She then suggested a healthy conversation to have is the research that you can afford compared to the research you can recommend. The Agency struggles with this decision but if they had the recommendations, it would make things go a lot easier.

Dr. Bigelow added that part of Dennis's approach is that if we can build a strong enough case, then we may be able to increase the R&D funding. Mr. Bussolari inquired about the Portfolio approach Dennis was supposed to brief the Executive Council. Ms. Bigelow informed them that meeting would not occur until the end of April.

Dr. Hansman suggested that the FAA provide the Subcommittees with a written task statement to help clarify the assignment and ensure everyone was working towards the same output; Cathy agreed and said she would work with Dennis Filler to get that everyone as soon as possible.

Dr. Jaiwon Shin added that we need to find out what the FAA thinks needs to be done with research areas. Mr. Christopher Oswald asked Dr. Bigelow if she could see that the Subcommittees submit a report on the findings they will need for the next meeting. He then stated that getting the tasking letter is important because that will provide the boundaries that we are working at.

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**Presentation NASA Aeronautics Strategic Vision | Presenter Robert Pearce**

Dr. Jaiwon Shin gave a brief introduction to Mr. Robert Pearce stating that he has been working very hard for the past two years on the Strategic Vision.

Mr. Pearce said that this started with a motivation to build a new and updated strategy for NASA Aeronautics. There are a lot of opportunities to take advantage of to bring them into airspace sectors such as IT and Storage Technologies. There are three big drivers for aviation; Global Mobility, Environmental Challenges, and Technology Convergence. Looking at the background trends and the analysis they were able to develop a Vision for Aviation that included some research thrusts. The vision is right at the core for continuing to do what they are doing for Safety NextGen Efficiency Environment. They are looking at transformative, sustainable and global ideas. Through these ideas they have developed six strategic thrusts to project near, mid and long term outcomes for NextGen with the FAA. They are also doing an ARMD Reorganization that will promote innovation and convergent research with the following three goals: pursue innovative solutions aligned to the strategic thrusts, incentivize multi-disciplinary “convergent research”, and enable greater workforce and institutional agility and flexibility.

#### Questions and Comments

Mr. Mahendra Joshi asked in capability and such, our customers are demanding more for less. You didn't point that out so I assume that affordability is built into this.

Mr. Pearce commented that affordability is one of the driving factors for this strategy. Due to the nature of our mission we tend not to put that on the front line but it is included.

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**Presentation Aircraft Safety Subcommittee Report | Presenter Joe Del Balzo**

Mr. Joe Del Balzo reported that half of the Subcommittee meeting was done jointly with the Human Factors Subcommittee to review the programs where they had a common interest. In addition to this, they also had two individuals from the NAS Operations Subcommittee there. He stated that the objective of the meeting was to provide their comments and thoughts on the FY 2016 portfolio. One of the first things they have seen is the progress the FAA has made on developing their internal core capability for several programs. Mr. Del Balzo comments that my report contains a lot of the information that is reiterated from past REDAC meetings. Mr. Del Balzo reviewed the following areas

**Weather Technology in the Cockpit (WTIC)** - We saw progress in the WTIC program. More work required to establish correlation between better weather information in the cockpit for general aviation pilots and accident reduction.

**Unmanned Aircraft Systems (UAS)** – The Spring meeting was the first time the Subcommittee was able to look at the UAS roadmap. The subcommittee was not able to comment on the roadmap because it was not specific enough. There was concern over what the FAA will

contribute to the UAS sites. They were informed that the FAA will not provide funding to the test site operators, no research requirements to the operators, and they have chosen to conduct research the FAA decides to support. Therefore, it is not clear that the FAA will get valid data. Mr. Del Balzo stated that there are two things they would recommend: ensuring that research can focus on outputs that manufacturers and the FAA as a regulator can use rather than focus on novelty solutions, and developing a more focused approach that addresses the FAA and the airspace operators' perspective as well.

**Terminal Area Safety (TAS)** - In FY 2016 one of the TAS requirements has been "zeroed out." He added that this work will either get done with FY 2015 funds or it has been zeroed out because it did not make the priority list.

### Questions and Comments

Regarding the TAS requirement that was not funded in FY 2016, Dr. Hansman asked Mr. Del Balzo what was the research on the stable criteria and what were they doing? Was there a specific thing they were doing for example look at different stable approaches?

Mr. Del Balzo stated that the risks related to unstable approaches, what the research is and then providing recommendations. They were looking at data, doing a lot of simulations and as of now they are doing a lot of data analysis.

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### **Presentation** Human Factors Subcommittee Report | **Presenter** *Amy Pritchett*

Dr. Pritchett reiterated Mr. Del Balzo's comment on the Human Factors Subcommittee meeting being combined with Aircraft Safety Subcommittee. One of the briefings that they had was on the Performance-based Operations Advisory Rulemaking Committee/Commercial Aviation Safety Team (PARC/CAST) Flight Deck Automation Working Group report. The report has been released and actions such as Safety Alert for Operations (SAFO) have been taken. With every new technology or operations coming up there has been an increase in training and skill requirements for the human pilots.

Dr. Pritchett stated that the number of flights in which aircraft malfunctions were found require actions by human pilots. Pilots mitigate risks and resolve other problems in the system.

Dr. Pritchett wants to clarify what is the role of the REDAC and the appropriate information to provide them. She wants to make sure they are performing risk management thoroughly especially when faced with pop-up problems.

Dr. Pritchett discussed the findings listed below.

- Fatigue Risk Management System (FRMS) database for pilots. The Subcommittee found that key role of development of FRMS database needs is to support the implementation at air carriers, guiding a standard implementation at the air carriers, and of the allowing the FAA to

monitor for continuing flight crew fatigue issues. This research has been funded but its tentative start date is FY 2016, which is after Code of Federal Regulations (CFR) Part 117.

- Dr. Pritchett stated that she will add on to Mr. Del Balzo's presentation about WTIC. Research plans need to articulate the pilot decisions that they are aiming to support and then analytically define how WTIC-provided information and portrayal of that information is expected to improve pilot decision making.
- The Subcommittee saw some common themes for both air and ground, particularly in the NextGen Portfolios. Common themes of integration operations that involve pilots and controllers where it will simultaneously change their tasks could be done synergistically. Will they put the work on pilots or the ground? We recommend that the Air Traffic Organization (ATO) and Office of Aviation Safety (AVS) coordinate with the Assistant Administrator for NextGen (ANG) to develop a consensus top 5 assessment of human performance issues with NextGen air/ground to influence the appropriate research.
- The Subcommittee found the Human-System Integration (HSI) roadmap is under represented and the Operational Improvements (OI) is not well described. We recommend that Human Factors Division should perform an analysis of potential NAS (National Air Space) actor's task and work environment changes related to mid-term NextGen implementation and reflect the implications on the HSI roadmap.

#### Questions and Comments

Mr. Steve Bussolari addressed the comment from Dr. Pritchett suggesting that the research and development (R&D) process be revised, stating that perhaps it should be reviewed.

Dr. Hansman suggested that the recommendation should be edited to be more detailed to address specific issues and concerns.

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#### **Presentation** NAS Operations Subcommittee Report | **Presenter** *Steve Bussolari*

Mr. Bussolari stated in the past few meetings they have focused on the Aviation Weather Research Program (AWRP) and the methodology they use. MITRE informed them at the August 2013 meeting that it has been renamed to the Operational Weather Needs Analysis (OWNA). They are pleased with the progress of the methodology to balance the funding across the portfolio. The tool itself is more qualitative than it is quantitative, going forward they anticipate a need for a more quantitative analysis.

The Subcommittee was concerned the Wake Re-categorization funding was not sufficient in FY 15 but the trajectory showed it would pick back up for FY 16. They hope that the team will not disband and remain consistent.

Dr. Bussolari and Ms. Whitley had a brief discussion about the August meeting for the NAS Ops Subcommittee to discuss the funding the FAA needs to accomplish the work that needs to get done.

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**Presentation** Airports Subcommittee Report | **Presenter** Chris Oswald

Mr. Oswald stated that there is a modest increase in budget for FY 2016. They recommend that the program go forward for the 2016 request.

They are awaiting more extensive results from the project studying tire and pavements in winter weather conditions. They were only able to acquire one week of research data this winter which is not sufficient. There is a lot of value in this study. They will be able to make a more definite decision as to whether or not this study should continue or be moot.

Dr. Hansman asked if they are able to articulate and use these results. Mr. Oswald stated that they have not been able to do so. They are skeptical as to whether this data would fit a model. Mr. James White added that this is one of the more high risks research out there. They are looking for raw data to help predict stopping distance of an aircraft in winter weather with contamination on the runway surfaces. At the moment there are no devices like this on the market; however, there is other research parallel to this going on outside the Agency.

Mr. Oswald spoke about research priorities and future needs the Subcommittee recommended such as airports surface surveillance. It ties in safety as well as efficiency. There are ground vehicle surveillance, avian surveillance for wild life, and the operational front. He stated that he would really like to see NextGen bring some of this in together.

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**Presentation** Environment and Energy Subcommittee Report | **Presenter** *Steve Alterman*

Mr. Alterman informed the members stating that it will be his last time briefing them. He thanked them, as well as Gloria for their appreciation over the past years.

Mr. Alterman addressed the cut in the Facilities and Equipment (F&E) budget and stated that it will affect the on-going work in the operational area.

The Subcommittee finds that the noise is the most common complaint from citizens. The Subcommittee advises that the FAA update their websites to be more “user” friendly. The Subcommittee is suggesting the Agency need to reconsider the funding cutback due to the noise factor. Mr. Alterman stated that the cooperation of other agencies is highly important for this research.

Mr. Carl Burleson introduced Mr. Rich Swayze the new Assistant Administrator for Policy, International Affairs and Environment. . He’s astonished at how low the noise standards are today. They want to be able to make legitimate decisions based on real scientific data. They are open to ideas from the agency as to how their research approach could be improved. Mr. Burleson thanked Mr. Alterman for his years of chairing the Subcommittee.

Dr. Hansman and members agreed that there were no issues that needed to be included in the cover letter to the Administrator. He thanked the members and meeting was adjourned.



**Members in Attendance:**

Steve Alterman  
Joe Bertapelle  
Steve Bussolari  
Joe Del Balzo  
John Hansman (Chair)  
Amy Pritchett  
Jaiwon Shin

**Others in Attendance**

Candice Albert, JMA  
Cathy Bigelow, FAA  
Ed Bolton, FAA  
Steve Bradford, FAA (Teleconference)  
Carl Burleson, FAA  
Jason Demagalski, FAA  
Colleen Donovan, FAA  
Gloria Dunderman, FAA  
Mike Gallivan, FAA  
John Hickey, FAA  
Jim Hileman, FAA  
Urmela Hiremets, Mitre  
Walt Hogan, Booze Allen  
Mahendra Joshi, Boeing  
Brad Keelor, British Embassy  
Lourdes Maurice, FAA  
Maureen Molz, FAA  
Eric Neiderman, FAA  
Lee Olson, FAA  
Mark Orr, FAA  
Julia Pounds, FAA  
Nick Stoer, Stoer & Associates  
Rich Swayze, FAA  
Michael Whitaker, FAA  
Jim White, FAA  
Pam Whitley, FAA  
Frank Wondolowski, FAA

**Research, Engineering and Development Advisory Committee  
Federal Aviation Administration (FAA)  
FAA Headquarters, 800 Independence Avenue, SW  
Washington, DC – 10<sup>th</sup> Floor Round Room  
April 17, 2014**

**Agenda**

	(Public Meeting Announcement)	(Pam Whitley)
9:00 am	Comments	Michael Whitaker
9:30 am	Welcome	John Hansman
9:45 am	Comments/Organization Update	Pam Whitley
10:00 am	Comments – NextGen Update	Edward Bolton
10:15 am	Break	
10:30 am	REDAC Holistic View – Going Forward – August Meetings	Cathy Bigelow
11:00 am	NASA Aeronautics Strategic Vision	Robert Pearce
11:30 am	Subcommittee Report – Aircraft Safety	Joe Del Balzo
12:00 pm	Lunch	
1:00 pm	Subcommittee Report – Human Factors	Amy Pritchett
1:30 pm	Subcommittee Report – NAS Operations	Steve Bussolari
2:00 pm	Subcommittee Report – Airports	Chris Oswald
2:30 pm	Subcommittee Report – Environment & Energy	Steve Alterman
3:00 pm	Break	
3:15 pm	Committee Discussion - Recommendations - Future Committee Activity	John Hansman
4:00 pm	Adjourn	